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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/160,583	09/25/1998	TAKAKO KAMO	0050-1545-0	6527
22850	7590	05/04/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CREPEAU, JONATHAN	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/160,583

Applicant(s)

KAMO, TAKAKO

Examiner

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-27 is/are pending in the application.
- 4a) Of the above claim(s) 6-18 and 20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-5, 19 and 21-26 is/are allowed.
- 6) ☒ Claim(s) 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 2-27. Claims 6-18 and 20 remain withdrawn from consideration. Claims 2-5, 19, and 21-26 are allowed. Claim 27 is newly rejected under 35 USC §103 and §112, first paragraph, as necessitated by amendment. Accordingly, this action is made final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 27, in line 4, recites the species " V_2O_3 ". There does not appear to be sufficient support for this particular compound in the application as originally filed. The specification, at page 13, line 6, discloses V_3O_3 , but fails to disclose or suggest the claimed V_2O_3 . As such, the recitation of this compound in claim 27 is considered to introduce new matter into the application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al (U.S. Patent 5,702,845) in view of JP 7-192723.

Regarding claim 27, Kawakami et al. teach a secondary battery with a nonaqueous electrolytic solution in column 9, lines 39-60. In column 7, line 44 et seq., the reference further teaches a positive electrode active material comprising a transition metal sulfide that may comprise copper, silver, or gold, and a negative active material that comprises a carbonaceous material or a metal oxide comprising vanadium, among other elements. As disclosed in the Examples, the positive active material may be present in an amount of 92 % by weight of the positive electrode. Although the reference does not expressly teach that Cu, Ag, or Au is present in a range of 0.4 to 5 per unit of sulfur as recited in claim 27, the reference is considered to be anticipatory of this formula because the artisan would at once be able to envisage species of sulfides falling within the claimed subscript range. See MPEP §2131.02. Regarding the limitation that the sulfide material is contained the negative electrode, the positive electrode of Kawakami et al. would inherently function as a negative electrode upon charging of the battery due to the polarity reversal. Regarding the limitation that the sulfide material is operable in the range of 0-1.5V with respect to the oxidation-reduction potential of lithium, this limitation is also

inherent in the reference. The potential difference generated between the claimed sulfide and a lithium counterelectrode is an inherent property of the sulfide, just as all electrode material pairs have an inherent potential difference between them. The magnitude of the potential difference is highest when the battery is in a fully charged state and subsequently approaches 0V as the battery is discharged.

While Kawakami et al. teach that the negative (as identified by Kawakami) electrode may comprise a vanadium oxide, the reference does not expressly teach that the oxide takes the form V_2O_5 , as recited in claim 27.

JP 7-192723 is directed to a nonaqueous electrolyte secondary battery (see abstract). The battery comprises a negative electrode that comprises a carbonaceous material and a quantity of metal oxide such as V_2O_5 (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use V_2O_5 as the negative active material of Kawakami et al. In the abstract, JP '723 teaches that the purpose of the metal oxide addition is "to provide a nonaqueous electrolyte secondary battery excellent in cycle characteristic and holding characteristic." As such, the artisan would be motivated to use V_2O_5 as the vanadium oxide of the negative electrode of Kawakami. Thus, the instantly claimed limitation that the positive electrode contains V_2O_5 would be rendered obvious, because as noted above, the negative electrode of Kawakami would function as a positive electrode upon charging.

Allowable Subject Matter

6. Claims 2-5, 19, and 21-26 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The reasons for allowance of independent claims 19 and 21 were given in the previous Office action and remain applicable herein. These reasons are repeated below. Additionally, independent claim 26 is allowable for these same reasons.

Claims 19, 21, and 26 are directed to a secondary battery (claim 21) and an energy storage device (claims 19 and 26) comprising a nonaqueous electrolyte solution and a negative electrode which releases electrons upon discharge and comprises a metal sulfide in a weight percentage of 75-99.9%. Kawakami discloses relevant sulfide materials for use in a positive electrode (see col. 7, line 44 et seq.). However, this electrode would not release electrons upon being discharged, as recited in claims 19, 21, and 26 (it would *accept* electrons). Therefore, claims 19, 21, and 26 patentably distinguish over Kawakami. Additionally, Plichta et al (U.S. Patent 5,154,990) teach a CuS negative electrode material in column 3, line 12. However, the reference teaches solid electrolytes (see abstract). It would not be obvious to replace the solid electrolyte of Plichta with a liquid electrolyte, as required by the instant claims, because Plichta teaches in column 3, line 3 that "[i]n the lithium-organic solvent electrolytes there are strongly solvated ionic species that tend to irreversibly cointercalate into the electrode lattice structure resulting in significant capacity losses. Since the solid state cell operates only through the diffusion of lithium ions, this effect is not present." Accordingly, claims 19, 21, and 26 are also distinguished over Plichta et al.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

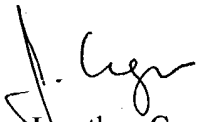
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (571) 272-1302. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Patent Examiner
Art Unit 1746
May 2, 2004